Research on Education Support System using Motion Capture
- Measurement of Movements for Violin and Nihon Buyo -

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With the goal of constructing an educational support program in the art fields, motion capture data of practitioners and students was collected, analyzed and used for 3DCG human modeling. Succession of advanced technical skills in the art fields, such as in the traditional Japanese dance form known as Nihon Buyo and in violin performance, is becoming difficult due to a decrease in the number of specialists. Optical motion capture, the main analysis system for movement, was used because it is possible to measure 360 degrees of motion and detailed movements which cannot be seen or understood can also be expressed as numerical values. This resulted in successful measurement of the movements of Nihon Buyo performances and violin performances, although compensation for areas between data points was required. In particular, even in the measurement of movements in the violin performance in which the many markers which need to be attached may cause interference, it was found to be measurable. Also, an analysis of the frequency component of a violin's A and the relevance of the performance movements was conducted using experimental data from one practitioner and one student. The data from the measured movements of Nihon Buyo performances and violin performances were used for both Augmented Reality (AR) and 3DCG human models, and the verification of movement became easier as the display method showed the vertex position. Furthermore, the possibility that a general user without sophisticated motion capture equipment could also easily perform a comparison of their movements and those of an AR model was verified. Future research will focus on compensation for marker areas when optical motion capture data is not available and the influence of movements on sound. The authors would like to use this type of modeling to construct a program for educational purposes.